Mass Audubon
Legislative Affairs
Six Beacon Street, Suite 1025 ▲ Boston, Massachusetts 02108
tel 617.523.8448 ▲ fax 617.523.4183 ▲ email beaconhill@massaudubon.org

June 24, 2009

Commissioner Philip Giudice
Massachusetts Department of Energy Resources
100 Cambridge St., Suite 1020
Boston, MA 02114

Commissioner Rick Sullivan
Massachusetts Department of Conservation and Recreation
251 Causeway Street, Suite 600
Boston, MA 02114-2104

Re: Wind Power Potential for State-owned Lands – Public Listening Sessions

Commissioners Giudice and Sullivan;

Thank you for the opportunity to comment on your proposal for *Wind Power Potential for State-owned Lands*. This is an important conversation and we are pleased to see the initiative move forward through the first steps of a necessary public engagement process. As a conservation organization, Mass Audubon recognizes the need for and supports the development of clean energy. We view energy policies, projects, and legislation within the context of the threat of rapid climate change, oil spills, strip mining, acid rain, and air pollution. The combustion of fossil fuels releases greenhouse gases including carbon dioxide and methane that accumulate in the lower atmosphere and rapidly heat the earth. Combustion of fossil fuels also results in the release of mercury that bioaccumulates in the environment, causing health problems for humans and other animals. Rising sea levels caused by warming flood low-lying barrier beaches and islands that serve as critical habitat for coastal birds including the endangered Roseate Tern and threatened Piping Plover. We also fully recognize the importance of land conservation, protecting an already stressed natural world which faces the growing threat of climate change. To combat the threat of climate change, we believe that increases in energy conservation and efficiency are a first priority and that clean energy capacity needs to grow quickly in an environmentally protective manner. Of all the renewable energy technologies available today, wind energy is the fastest growing, most successful, and most readily available. Our review standard for proposed individual wind energy projects is that they are sited in a manner that avoids areas of high sensitivity and pose no ecologically significant threat to living resources of the surrounding area. This does not mean zero impact on those resources as we recognize that the production of energy always entails some level of environmental impact. As such, we encourage responsibly sited wind as a clean and renewable energy resource, set in the context of protecting wildlife and the diverse values of public conservation lands.

Summary Position Statement: While it is critical from a global warming and climate change mitigation perspective to rapidly advance Governor Patrick's goal of producing 2,000 megawatts (MW) of wind energy by 2020, it should not come at the expense of sensitive sites that were intended to be protected in perpetuity on state conservation lands. We view the analysis which identified 947 MW of wind potential on state owned lands to be very preliminary, and as the analysis is not complete, recommend that no wind energy facilities be proposed on these constitutionally protected properties until a full and public evaluation is completed. Both capacities on private and public lands should be evaluated, and for state conservation lands their many values should be fully considered in the context of their original purpose, ecological impacts, and the amount of power that could be generated. Analysis of non-conservation state lands also needs to be conducted at the same level as has been done for conservation lands, and an overall plan for development of wind energy throughout the state needs to be developed with broad public input. A statewide plan and criteria for siting wind energy facilities should be developed, with public input, resulting in a blueprint for the development of wind energy over the next five to ten years.

Background: Mass Audubon is a land conservation organization, and over the last 114 years has worked to protect thousands of acres of land, both at our own sanctuaries and in partnership with the Commonwealth. Massachusetts public conservation lands were acquired in large part with public funds for a specific purpose – to be set aside as parks, to protect rare plants and animals, to protect watersheds, as places for recreation and beauty, for their forestry values, and for their conservation values. Developing wind power generation, particularly at a utility scale, may not be consistent in many instances with the purpose of these lands. However, there may be areas, including farmlands, additional state properties, and in some rare instances areas protected under Article 97 of the Massachusetts Constitution, that would be both viable from a wind resource perspective and would not compromise the conservation values of public lands.

Energy conservation and efficiency, in addition to new clean generation, are also important components of environmentally sound energy policy and as such, we noted with great interest the report on "Renewable Energy and Energy Efficiency Potential at State-Owned Facilities"[1](hereafter called the *Report*). We are pleased to see recognition of the need for small scale clean energy facilities as well as opportunities for increased conservation and efficiency. However, of note, the report highlights 947 MW of wind power that could be located on state lands, the majority of which are owned by the Department of Conservation and Recreation (DCR). We recognize that, as the cover letter for the report states, the "analysis of potential wind energy on state lands is strictly theoretical" and would require careful consideration. Considering the results of this *Report*, it is likely that wind energy proponents may propose projects on publicly owned park or forestlands. Public conservation stewardship of these lands must be the first and leading criterion against which the siting of wind farms in such locations is measured.

We note with concern in the Executive Office of Energy and Environmental Affairs (EEA) "Renewable Energy Siting Study"[2], also known as the Barriers to Siting Report, that the lack of large single-owner parcels is perceived by developers to be a barrier to siting wind in the state. This is a "perceived difficulty". Massachusetts is of a different geography and landmass than some northern and central states with large tracts of single-owner parcels, but to make the leap from lack of single-owner parcels to siting on state conservation lands is inappropriate.

Facts about state owned conservation land:

- State owned conservation land is only about 1/10th of the acreage of the Commonwealth and is an even greater percentage of sensitive, undeveloped land. The Departments of Fish and Game (160,000 acres) and Conservation and Recreation (440,000 acres) own together roughly 600,000 acres; the Commonwealth is just over 5 million acres.
- Two-hundred and ninety-one rare species are on DCR lands, out of 435 total listed species. Some of which would be at risk from the construction and operating of wind turbines. Twenty-four percent of DCR lands are Priority Habitat for state-listed species. Although the analysis in the *Report* did take into account listed species for the footprint of the turbine, analyses were not done for potential roads, transmission lines, or substations or for at-risk birds or bats not protected under the Massachusetts Endangered Species Act (M.G.L. Ch.131A). Furthermore, no comprehensive rare species inventories have been done on state lands, so it is likely that many actual areas of rare species habitat have not been mapped.
- Fifty-four percent of DCR lands are identified as important conservation areas in the *BioMap*[3] or *Living Waters*[4] reports.
- State conservation lands are protected under Article 97 of the Massachusetts Constitution, as such their conversion to power generation would require a 2/3 vote of the Legislature. For state conservation lands donated or bought with federal or other restricted funds, it may not be possible to site wind energy facilities. Donated lands may not be able to be converted to other uses and deeds of each parcel must be reviewed.

---

[1] Massachusetts Executive Office of Energy and Environmental Affairs, Massachusetts Clean Energy Center. February, 2009. *Commonwealth of Massachusetts Renewable Energy and Energy Efficiency Potential at State-Owned Facilities*. Developed by Navigant Consulting, Inc. http://www.mass.gov/Eoeea/docs/eea/press/publications/022409_renew_potential_study.pdf

[2] Massachusetts Executive Office of Energy and Environmental Affairs. April, 2009. *Renewable Energy Siting Study – Env09 Pol05*. Prepared by TRC, Noble & Wickersham LLP, Medgal Associates. http://www.massaudubon.org/PDF/wind/eea_barriers_to_wind_siting_report.pdf

[3] Massachusetts Department of Fish & Game, Natural Heritage & Endangered Species Program. 2001. *BioMap: Guiding land conservation for biodiversity in Massachusetts*. Out of print.

[4] Massachusetts Department of Fish & Game, Natural Heritage & Endangered Species Program. 2003. *Living Waters: Guiding the Protection of Freshwater Biodiversity in Massachusetts*. http://www.mass.gov/dfwele/dfw/nhesp/publications/nhesp_pubs.htm

Initial Analysis: We appreciate the context of the *Report* as an initial analysis and offer the following specific suggestions for further refinement. These suggestions are set within the overarching recommendation that the state prepare a statewide plan and criteria for siting wind energy facilities.

- **Better Mapping** As the *Report* states, the majority of sites identified are owned by DCR and as such are protected under Article 97. It is an artifact of agency resources and investments that Article 97 lands tend to be well mapped, while other state holdings are not. At a minimum, before further consideration of Article 97 lands for their wind energy potential, all state-owned parcels, including former state hospital lands, Mass Highway and Turnpike properties, and other facilities, should be mapped to the parcel level and included in a refined iteration of the analysis. We understand that this mapping has begun and applaud the initiative. Funds from the Regional Greenhouse Gas Initiative (RGGI) auctions could be used to complete this project. Thus far, the first three RGGI auctions have netted $44.5 million dollars. A mapping project of this scale would likely cost less than $300,000.
- **Further Analysis of Private Land Potential** State conservation lands are only about 1/10th of the acreage of the Commonwealth. A complementary statewide analysis of wind power potential on private lands would provide context for the careful consideration needed for this exercise. In addition, wind siting reform language proposed by the Executive Office of Energy and Environmental Affairs and submitted to the legislature for consideration in *An Act Relative to Wind Energy Reform* is supported by Mass Audubon and should help facilitate wind energy development on private lands.
- **Analysis in Context of Other State Goals and Initiatives** Several of the sites identified in the *Report* have also been identified as Forest Reserves[5] by EEA. The Forest Reserves were approved by the DCR Forest Stewardship Council, are part of the regional management plans, and as such are protected under M.G.L. Ch. 21 S. 2F as the DCR Commissioner is required to manage the lands consistent with approved management plans. The Reserves are intended to be protected in perpetuity from significant human impacts such as logging or road building. Forest Reserves are 20% of state owned forestland, and the Large Reserves, which are the most ecologically significant remaining large blocks of forest in the state, are only 10% of the state lands. The remaining 80% are not designated as reserves. In addition, there should be no further steps towards development of wind on DCR lands until the ongoing DCR Forest Futures Visioning Process[6] concludes, provided that the recommendations from the Process find that wind energy facilities are an appropriate use of DCR lands. As noted above, many of DCR's holdings are identified under the *BioMap* and *Living Waters* reports as important conservation areas. While these may not be in conflict with siting wind, they should be considered.

In addition, when considering the potential gains of developing wind on state lands, the reasons for acquisition, potential on private lands, and potential ecological impacts must also be carefully considered.

- **The ecological values of state conservation lands should be identified.** Were they acquired to protect rare species, as large tracts of interior forest, or forestry or recreation? Can these same energy gains be made with other state properties not included in the current analysis?
- **The percentage of Massachusetts, and Berkshires, power needs provided by 947 MW should be documented.**
    - A large turbine averages about 1.4 MW; at this size roughly 676 turbines would be needed. It is unclear what the capacity factor is for this target. With a capacity factor of 100% (all turbines operating all the time), 947 MW is a little less than 5% of Massachusetts annual energy consumption. *(Capacity Factor = Actual amount of power produced over time/power that would have been produced if turbine operated at maximum output 100% of the time)*
    - Capacity factor between 25-40% is common in wind farms due to two facts. 1) The wind is not always blowing, so not all the turbines are constantly turning. 2) Even when the wind is blowing, it is not always at maximum speed and therefore the turbines are not producing at their potential[7].

[5] http://www.mass.gov/?pageID=eoeeaterminal&L=4&L0=Home&L1=Agriculture%2C+Forestry%2C+Fishing+%26+Hunting&L2=Sustainable+Forest+Management&L3=Forest+Reserves&sid=Eoeea&b=terminalcontent&f=eea_lf_reserves_what&csid=Eoeea

[6] http://www.mass.gov/dcr/news/publicmeetings/forestryfvppfps.htm

[7] American Wind Energy Association FAQ. http://www.awea.org/faq/wwt_potential.html

  - If the 947 MW is at 100%, then with a capacity factor of 40%, the turbines would produce 378.8 MW, or just over 2% of MA annual energy needs.
  - With a capacity factor of 25%, the turbines would produce 236.75 MW, or around 1% of MA annual energy needs.
  - These calculations assume that all turbines would be built; in reality many of the sites have high ecological or other public values and would not be appropriate for wind turbines.
- **The ecological impacts of the turbines should be demonstrated.** What would the footprint of the turbines, roads, transmission lines, and substations be? How does this vary between Cape Cod and Southern MA, which has a different topography, and the Berkshires?
  - The Cape Cod Commission region is 26.6% developed; the Berkshires Regional Planning Commission region is 6.4%. Additionally, the eastern part of the state is much more heavily developed with a greater energy need and would require less new transmission infrastructure. Development in previously undeveloped areas can have a much greater impact on the overall ecological integrity of the area. Mass Audubon's *Losing Ground IV: Beyond the Footprint*[8] shows that a single family house has 3 to 8 times the ecological impact in an undeveloped area than one in a developed area.
- **Specifically, the impacts from habitat fragmentation should be shown.** Based on The Nature Conservancy's (TNC) data analysis with state partners, of the Commonwealth's 3 million acres of forested land:
  - 130,000 acres (or 3.5% of all forests) is in unfragmented patches of 3,000 acres or larger.
  - 174,000 acres (5.9% of forests) is in unfragmented patches of 1,000 – 3,000 acres.
  - 129,000 acres (4.3% of forests) is in unfragmented patches of 500 – 1,000 acres.
  - A side by side comparison of the TNC large forest block maps and the EEA wind siting map indicates that many of the potential sites are located within the last remaining large forest blocks in the state. Any new roads and other development within these blocks will have habitat fragmentation effects far in excess of their direct footprint.
  - These blocks are the most intact habitats that will be most resilient in the face of climate change and are vital to the ecological adaptation capacity of our landscape. Loss or fragmentation of these areas would have disproportionately large impacts to the ecological integrity of Massachusetts. We suggest using the University of Massachusetts Conservation Assessment and Prioritization System (CAPS) for further analysis.
- **Article 97 must be considered.** Construction of wind turbines is a commercial/industrial type of development and would constitute a change in use of lands acquired for the public purpose of natural resources conservation and recreation. Such change of use would be subject to the same rigorous EEA policy requirements for any other including provision of compensation of equal conservation and monetary value to offset impacts to publicly owned natural areas. The full impact of such projects should be taken into account, including direct impacts as well as changes in habitat and indirect effects of increased accessibility in remote areas where new access roads and utility lines would be involved. Any projects requiring a lease or transfer of state lands from the Commonwealth to a private developer or operator would involve a further disposition of public interests in Article 97 lands which would have to be reviewed rigorously for alternatives and adequately compensated. In the case of high ridgetops in large unfragmented forest blocks, there are few if any private lands remaining that could be acquired as compensation.
- **Economic benefit.** It is not likely that the state will build and operate energy facilities. If lands are leased or transferred, revenue from the lease or transfer and mitigation fees from operation should all be directed to an off-budget trust dedicated solely to habitat protection and restoration, and specifically targeted to management strategies designed to respond to a changing climate, such as dam removal programs which restore river connectivity and coastal waterbird protection programs. In the cover letter to the *Report*, revenue is proposed to go back to the host towns. For municipally owned conservation lands, this is certainly appropriate (for municipal conservation purposes), but for state owned conservation lands purchased with state funds these revenues should be tied tightly to state conservation initiatives.

[8]Mass Audubon. 2009. *Losing Ground IV: Beyond the Footprint.* http://www.massaudubon.org/losingground/

Statewide Planning and Permitting Criteria Needed: We recommend that the state undertake a coordinated public planning program to guide and facilitate appropriate, fair, and orderly development of the wind energy industry in Massachusetts. The geographic area of this plan should encompass all lands within the state, including an analysis of state lands. The resulting plan should identify areas where both wind energy is commercially viable and environmental impacts are minimized.

In addition to a statewide siting plan, criteria should be developed for more precisely evaluating site-specific environmental impacts of projects proposed within areas generally identified as probably suitable in the statewide plan. These criteria should then be applied statewide in energy facility site permitting and other applicable regulatory processes. Similarly, standardized pre- and post-construction monitoring protocols should be established to assess wind energy project impacts on birds and bats, other living resources, and habitat. Project permits should be conditioned to enable modification if actual bird or bat hazards unacceptably exceed predicted risks. The statewide plan should include adaptive management mechanisms providing for monitoring of early projects to inform permitting for subsequent projects.

There is presently no Massachusetts wind energy siting plan or criteria, applied consistently throughout the Commonwealth that ensure the minimization of environmental impacts resulting from the development of wind energy facilities . While Mass Audubon recognizes that there are regulatory programs in place to permit wind energy projects, and that legislation to streamline the permitting process is before the legislature, we believe it would be beneficial to both the industry and the environment to have a comprehensive planning and siting criteria framework in place to guide projects to the most appropriate locations regardless of the outcome of the proposed legislation. These criteria should be an element of a comprehensive Massachusetts land-based wind energy plan.

Factors to consider in plan criteria should include, but not be limited to, rare species, bat, raptor and migratory bird corridors, forest interiors, Areas of Critical Environmental Concern as designated by EEA, recreational/scenic values, important resource waters, proximity to transmission, roads, etc. Land-based wind farms developed in remote areas may require construction of new access roads with associated direct and indirect impacts to land and water resources, therefore large forested regions should also be addressed in a plan.

The plan should also identify appropriate and inappropriate areas and/or criteria for siting wind farms. The energy deregulation law (*Chapter 164 of the Acts of 1997*) established a fund dedicated to the promotion and development of renewable energy facilities. The Massachusetts Technology Collaborative (MTC) administers these funds. Some of this money has been spent mapping wind resources across the state. Development of a statewide wind energy siting plan to minimize environmental impacts would be a further and appropriate use of these funds as it would facilitate faster and perhaps less controversial development of wind energy facilities. The statewide siting plan should also encompass all land within Massachusetts and would complement the offshore mapping efforts underway as part of the Massachusetts Ocean Management Plan process. The state and federal government should cooperate in undertaking this planning process through a coordinated, comprehensive Massachusetts Environmental Policy Act/National Environmental Protection Act (MEPA/NEPA) review. The result should be a "programmatic" Environmental Impact Report/Statement (EIR/EIS). The planning process should be open and transparent, with ample opportunity for public comment. Once a statewide plan is developed through MEPA/NEPA, it can provide a blueprint for development of wind energy projects for the next five to ten years.

In addition to the effort that may go forward under the Administration's *Wind Energy Siting Reform Act*, siting criteria should be developed and included in the plan and submitted as a programmatic EIR/EIS to guide wind farms to locations where bird risks and other environmental impacts are low. Statewide, consistent environmental siting criteria should be built into state and federal wind energy development planning as well as permit review processes for specific projects. For example, wind turbines should not be located in areas where bird and bat use is especially concentrated, along major migratory corridors, or where rare or endangered bird or bat species are likely to be impacted. The cumulative impacts of multiple wind energy projects should be considered in both statewide planning for wind farm siting and in the environmental review and permitting processes for individual projects.

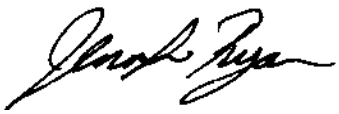
Other Options to be Considered: Further analysis of the potential and relative costs (both financial and environmental) of other renewable alternatives is also needed. For example, the *Massachusetts Renewable Energy Potential* Final Report prepared for Massachusetts Department of Energy Resources (DOER) and MTC August 6, 2008 identified a potential of 13,000 MW of solar photovoltaic power by 2020. Economic barriers were identified. Alternative options for allocation of available funds for renewable development should be considered, particularly in the context of the relatively larger investment in public funding to date for wind compared to solar, which led to the current relative economic advantage of wind over solar.

Innovative tools, such as new acquisitions of dual purpose, dual holder properties (e.g. Division of Capital Asset Management (DCAM) holds footprint, DCR/DFG holds surrounding and DCAM parcel reverts after decommissioning). This model would provide a buffer for facility and although it reroutes land conservation money, would be a more straightforward process than attempting to open existing state conservation lands. There should be a revisiting of Agricultural Preservation Restrictions to allow for profit from wind power generation.

Conclusions: We further urge the administration to more carefully consider all options and undertake a public planning analysis within the context of the ecological importance of public conservation lands. We appreciate your efforts to move us into a clean energy future, and look forward to working with the administration as this conversation develops.

Thank you for your time and consideration.

Sincerely,



Jennifer Ryan
Legislative Director